Notice of Allowability	Application No.	Applicant(s)	
	10/554,068	KADLER ET AL.	
	Examiner	Art Unit	
	Karen Cochrane Carlson, Ph.D.	1656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the paper filed June 11, 2007*.

2. ☒ The allowed claim(s) is/are *105-192*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 7/24/2006
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Applicant's election without traverse of Group I, Claims 1-10, 12-17, 19-21, 23-31, 34, 38-53, and 55-99, drawn to fusion proteins comprising pro-alpha chains and laminin in the reply filed on June 11, 2007 is acknowledged.

Benefit of priority is to April 22, 2003.

An **Examiner's Amendment** to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Barbara S. Gibbs on August 14, 2007.

Examiner's Amendments to the Claims:

1-104. (Canceled)

105. (New) A modified pro-α chain comprising at least part of a laminin glycoprotein wherein the at least part of a laminin glycoprotein is placed N-terminal to a triple helical forming domain of the pro-α chain.

106. (New) The modified pro-α chain as claimed in claim 105 wherein the triple helical forming domain is from a fibrillar forming pro-α chain.

107. (New) The modified pro-α chain as claimed in claim 106 wherein the triple helical forming domain is from a type I, II, III, V or XI pro-α chain.

108. (New) The modified pro-α chain as claimed in claim 107 wherein the triple helical forming domain is from a pro-α (III) chain.

109. (New) The modified pro-α chain as claimed in claim 108 wherein the pro-α chain further comprises a procollagen N-propeptide sequence, wherein the procollagen N-terminal sequence is replaced prior to N100 with the sequence for the laminin glycoprotein.

110. (New) The modified pro-α chain as claimed in claim 109 wherein a N- proteinase cleavage site associated with the N-terminal propeptide domain is modified such as to alter the domain's susceptibility to cleavage.

111. (New) The modified pro-α chain as claimed in claim 105, wherein the laminin glycoprotein comprises the globular domains of an α–chain of a laminin molecule.

112. (New) The modified pro-α chain as claimed in claim 111 wherein the globular domain is derived from the globular chain of Laminin-5.

113. (New) The modified pro-α chain as claimed in claim 111, wherein the pro-α chain further comprises a procollagen N-propeptide sequence, wherein the procollagen N-terminal sequence is replaced prior to N100 with the sequence for the laminin glycoprotein.

114. (New) The modified pro-α chain as claimed in claim 111 wherein the laminin glycoprotein comprises the amino acid sequence for at least the G3 globular domain of the α-chain of a laminin molecule.

115. (New) The modified pro-α chain as claimed in claim 114 wherein the globular domain is derived from the globular chain of Laminin-5.

116. (New) The modified pro-α chain as claimed in claim 114 wherein the laminin glycoprotein contains the amino acids of SEQ ID NO: 14.

117. (New) The modified pro-α chain as claimed in claim 114 wherein the pro-α chain further comprises a procollagen N-propeptide sequence, wherein the procollagen N-terminal sequence is replaced prior to N100 with the sequence for the laminin glycoprotein.

118. (New) The modified pro-α chain as claimed in claim 117 wherein a N- proteinase cleavage site associated with the N-terminal propeptide domain is modified such as to alter the domain's susceptibility to cleavage.

119. (New) The modified pro- α chain as claimed in claim 111 wherein the laminin glycoprotein comprises the amino acid sequence for the G1 to G3 domains of the α -chain of a laminin molecule.

120. (New) The modified pro-α chain as claimed in claim 119 wherein the globular domains are derived from the globular chain of Laminin-5.

121. (New) The modified pro-α chain as claimed in claim 119 wherein the laminin glycoprotein contains the amino acids of SEQ ID NO: 10.

122. (New) The modified pro- α chain as claimed in claim 105, wherein the laminin glycoprotein comprises at least part of the globular domains of Laminin-5.

123. (New) The modified pro- α chain as claimed in claim 105 further comprising a procollagen N-propeptide sequence, wherein the procollagen N-propeptide sequence is replaced prior to N100 within the sequence for the laminin glycoprotein.

124. (New) The modified pro-α chain as claimed in claim 123 wherein a N- proteinase cleavage site associated with the N-terminal propeptide domain is modified such as to alter the domain's susceptibility to cleavage.

125. (New) The modified pro- α chain as claimed in claim 123, wherein a N-proteinase cleavage site associated within the N-terminal propeptide domain is modified such as to alter the domain's susceptibility to cleavage.

126. (New) The modified pro-α chain as claimed in claim 125 wherein the N-proteinase cleavage site is modified such that the domain may not be cleaved.

127. (New) The modified pro-α chain as claimed in claim 126 wherein a region between the triple helical forming domain and the N-propeptide forming domain of the pro-α chain is modified to confer resistance to N-proteinases.

128. (New) The modified pro-α chain as claimed in claim 127 wherein Pro-Gln in the region is altered to Leu-Pro.

129. (New) A procollagen molecule comprising a trimer of pro-α chains characterised in that at least one of the pro-α chains is a modified pro-α chain as defined by claim 128.

130. (New) A procollagen molecule comprising a trimer of pro-α chains characterized in that at least one of the pro-α chains is a modified pro-α chain as defined by claim 105.

131. (New) A procollagen molecule as claimed in claim 130 wherein the pro-α chain is truncated C-terminal to the triple helical domain.

132. (New) A procollagen molecule comprising a trimer of pro-α chains characterised in that at least one of the pro-α chains is a modified pro-α chain as defined by claim 108.

133. (New) A procollagen molecule comprising a trimer of pro-α chains wherein the molecule includes one of SEQ ID NO: 10 or SEQ ID NO: 14.

134. (New) A collagen matrix comprising the procollagen molecule as defined by claim 130.

135. (New) A collagen matrix comprising collagen monomers having modified propeptide domains derived from procollagen molecules as defined by claim 131.

136. (New) A collagen polymer comprising at least one modified collagen monomer, wherein said modified collagen monomer comprises at least part of a laminin glycoprotein placed N-terminal to a triple helical forming domain in a collagen monomer.

137. (New) A dressing comprising the procollagen molecules as defined by claim 130.

138. (New) A dressing comprising a collagen matrix as defined by claim 134.

139. (New) A DNA molecule encoding the modified pro-α chain as defined by claim 105.

140. (New) A vector comprising the DNA of claim 139.

141. (New) The vector of claim 140 wherein the vector is a plasmid, cosmid or phage.

142. (New) The vector of claim 140 wherein the vector comprises a selectable marker.

143. (New) A host cell comprising the vector of claim 140.

144. (New) The host cell of claim 143 wherein the host cell is a mammalian cell.

145. (New) The host cell of claim 143 wherein the host cell is selected from the HEK293 cell line.

146. (New) The DNA molecule encoding modified pro-α chain as claimed in claim 139 characterized in that the molecule includes the bases of SEQ ID NO: 9.

147. (New) The DNA molecule encoding modified pro-α chain as claimed in claim 139 characterized in that the molecule includes the bases of SEQ ID NO: 13.

148. (New) A DNA molecule encoding modified pro-α chain as defined in claim 105, said modified pro-α chain comprising the amino acids of one of SEQ ID NO: 10 or SEQ ID NO: 14.

149. (New) A vector comprising the DNA of claim 148.

150. (New) The vector of claim 149 wherein the vector is a plasmid, cosmid or phage.

151. (New) The vector of claim 149 wherein the vector comprises a selectable marker.

152. (New) A host cell comprising the vector of claim 149.

153. (New) The host cell of claim 152 wherein the host cell is a mammalian cell.

154. (New) The host cell of claim 152 wherein the host cell is selected from the HEK293 cell line.

155. (New) A DNA molecule encoding modified pro-α chain as defined by claim 108.

156. (New) A vector comprising the DNA of claim 155.

157. (New) The vector of claim 156 wherein the vector is a plasmid, cosmid or phage.

158. (New) The vector of claim 156 wherein the vector comprises a selectable marker.

159. (New) A host cell comprising the vector of claim 156.

160. (New) The host cell of claim 159 wherein the host cell is a mammalian cell.

161. (New) The host cell of claim 159 wherein the host cell is selected from the HEK293 cell line.

162. (New) A DNA molecule encoding modified pro-α chain as defined by claim 115.

163. (New) A vector comprising the DNA of claim 162.

164. (New) The vector of claim 163 wherein the vector is a plasmid, cosmid or phage.

165. (New) The vector of claim 163 wherein the vector comprises a selectable marker.

166. (New) A host cell comprising the vector of claim 163.

167. (New) The host cell of claim 166 wherein the host cell is a mammalian cell.

168. (New) The host cell of claim 166 wherein the host cell is selected from the HEK293 cell line.

169. (New) A DNA molecule encoding modified pro-α chain as defined by claim 128.

170. (New) A vector comprising the DNA of claim 169.

171. (New) The vector of claim 170 wherein the vector is a plasmid, cosmid or phage.

172. (New) The vector of claim 170 wherein the vector comprises a selectable marker.

173. (New) A host cell comprising the vector of claim 170.

174. (New) The host cell of claim 174 wherein the host cell is a mammalian cell.

175. (New) The host cell of claim 174 wherein the host cell is selected from the HEK293 cell line.

176. (New) A medicament comprising the modified pro-α chain according to claim 105 for use in the treatment of wounds or fibrotic disorders.

177. (New) A medicament comprising the modified pro-α chain according to claim 108 for use in the treatment of wounds or fibrotic disorders.

178. (New) A medicament comprising the modified pro-α chain according to claim 115 for use in the treatment of wounds or fibrotic disorders.

179. (New) A medicament comprising the modified pro-α chain according to claim 128 for use in the treatment of wounds or fibrotic disorders.

180. (New) A medicament comprising the procollagen molecule according to claim 133 for use in the treatment of wounds or fibrotic disorders.

181. (New) A medicament comprising the collagen matrix according to claim 134 for use in the treatment of wounds or fibrotic disorders.

182. (New) A medicament comprising the collagen matrix according to claim 135 for use in the treatment of wounds or fibrotic disorders.

183. (New) A medicament comprising the collagen polymer according to claim 136 for use in the treatment of wounds or fibrotic disorders.

184. (New) A method of treating a wound or fibrotic disorder comprising administering to a subject in need of such treatment a therapeutically effective amount of a modified pro-α chain according to claim 105.

185. (New) A method of treating a wound or fibrotic disorder comprising administering to a subject in need of such treatment a therapeutically effective amount of a modified pro-α chain according to claim 108.

186. (New) A method of treating a wound or fibrotic disorder comprising administering to a subject in need of such treatment a therapeutically effective amount of a modified pro-α chain according to claim 115.

187. (New) A method of treating a wound or fibrotic disorder comprising administering to a subject in need of such treatment a therapeutically effective amount of a modified pro-α chain according to claim 128.

188. (New) A method of treating a wound or fibrotic disorder comprising administering to a subject in need of such treatment a therapeutically effective amount of a procollagen molecule according to claim 133.

189. (New) A method of treating a wound or fibrotic disorder comprising administering to a subject in need of such treatment a therapeutically effective amount of a collagen matrix according to claim 134.

190. (New) A method of treating a wound or fibrotic disorder comprising administering to a subject in need of such treatment a therapeutically effective amount of a collagen matrix according to claim 135.

191. (New) A method of treating a wound or fibrotic disorder comprising administering to a subject in need of such treatment a therapeutically effective amount of a collagen polymer according to claim 136.

192. (New) A method of treating a wound or fibrotic disorder comprising applying to a subject in need of such treatment the dressing according to claim 138.

Examiner's Amendments to the Specification:

Please delete the title and insert instead:

--- MODIFIED PRO-α PEPTIDES AND THEIR USES ---

Please insert the abstract, also attached hereto as a separate sheet:

----Abstract:

A modified pro- α chain comprising a triple helix forming domain linked to a polypeptide from at least part of a laminin glycoprotein. The pro-α chain may form part of a procollagen molecule that has the N-terminal domain retained. The procollagen molecules may be incorporated into collagen polymers, matrices and gels and be used for such applications as wound healing. ----

At page 1, line 6; page 29 line 7 and line 20, please delete "http://".

Please replace "No." with --- NO: --

At page 26, lines 11;14, and 21;

At page 27, lines 3, 9, and 11;

At page 28, line 21;

At page 31, lines 11 and 15;

At page 32, lines 1 and 4;

At page 35, lines 5, 6, 16, and 17;

At page 36, lines 1, 2, 24, and 25; and

At page 37, at lines 1, 2, 3, 4, and 5;

The following is an **Examiner's Statement of Reasons for Allowance**: The prior art of record does not teach or suggest fusion proteins comprising triple helical domains and laminin glycoproteins. The art cited in the parent PCT, EP 0 747 068, mentions at col. 1, paragraph 5, that collagens and other proteins such as laminin have been suggested as possible components of

wound healing and tissue implant materials. However, nowhere else in the reference is laminin discussed and there are no examples in which collagen and laminin are administered together. The PCT also cites EP 0 985 732, which corresponds to USP 6,277,600. In the '600 patent, at col. 4, paragraph 2, the collagen fusion proteins comprise biologically active peptides that are exemplified as being cytokines (growth factors, interleukins, interferons), and in the examples at Col 7 fusion proteins taught comprises collagen and IL-2. Cytokines are a different class of proteins when compared to laminins. Thus, there is no teaching or suggestion in the prior art to make and use fusion proteins comprising a triple helical domain and laminin. Therefore, the claims are allowable over the art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen Cochrane Carlson, Ph.D. whose telephone number is 571-272-0946. The examiner can normally be reached on 7:00 AM - 4:00 PM, off alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Kathleen Kerr Bragdon can be reached on 571-272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Karen Cochrane Carlson PhD

KAREN COCHRANE CARLSON, PH.D
PRIMARY EXAMINER

----Abstract:

A modified pro- α chain comprising a triple helix forming domain linked to a polypeptide from at least part of a laminin glycoprotein. The pro-α chain may form part of a procollagen molecule that has the N-terminal domain retained. The procollagen molecules may be incorporated into collagen polymers, matrices and gels and be used for such applications as wound healing. ----